

TWO NEW SPECIES OF *MEGASTYLUS* FROM THE NEW WORLD (HYMENOPTERA: ICHNEUMONIDAE; ORTHOCENTRINAE)

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Abstract.—Two new species of the orthocentrine genus *Megastylus*, *Megastylus fallax* and *Megastylus panamensis*, are described. *Megastylus panamensis* constitutes the first record of this genus from the Neotropical Region. The systematics of New World *Megastylus* are briefly discussed. Orthocentrinae are shown to be koinobiont endoparasitoids.

The orthocentrine genus *Megastylus* is distributed worldwide with about 30 described species. As with many ichneumonid genera, this represents only a fraction of the total number of species. In the New World, no species have been described south of the United States. Dr. Annette Aiello and her colleagues in Panama recently reared a *Megastylus* from a dipterous (Keroplastidae) ant-predator. It is a new species and is described here as *Megastylus panamensis* to complement the biological studies of the host. An unforeseen byproduct of this study is the discovery of a new species of Nearctic *Megastylus* from Arizona that was confused with *petilus* Dasch; it is described here as *Megastylus fallax*.

Specimens examined in this study are in the American Entomological Institute (Gainesville, Florida: AEIC). Morphological terminology mostly follows Townes (1969) as modified by Wahl (1989), with the exception that the "apical transverse carina" is referred to as the *posterior transverse carina*. *MSI* stands for the first metasomal segment. *T1*, *T2*, *S1*, *S2*, etc., are used for the various metasomal tergites and sternites. When the lengths of the body and wing are given, the values in parentheses are those of the holotype.

NEW WORLD MEGASTYLUS

The genus *Megastylus* is monophyletic, defined by the autapomorphies of: 1) an inflated scape that has the posterior margin membranous and infolded, and 2) long notauli that extend to the mesoscutal center (Wahl and Gauld, unpublished ms.). Ichneumonologists have previously been aware of its presence in the Neotropical Region, although no species have been described from there. The late Henry Townes sorted out 38 Neotropical species in the American Entomological Institute collection; they are distributed from Mexico to Chile. Ian Gauld (pers. comm.) has found 24 undescribed species in Costa Rica alone.

Dasch (1992) recognized 14 Nearctic species, dividing them into the *Megastylus* Group (10 species) and the *Dicolus* Group (4 species). These are defined as having the "anterior transverse groove of propodeum" close to the metanotum in the *Megastylus* Group or separated by about 0.3× the propodeal length (as measured from the metapostnotal posterior margin to the propodeal apex) in the *Dicolus* Group. Dasch's "anterior transverse groove" is the metapostnotum (Wahl, 1985) and the

Dicolus Group's condition represents an apparent lengthening of the metapostnotum; this is apomorphic within the subfamily. The *Megastylus* Group is therefore non-monophyletic and should not be recognized. The name of the *Dicolus* Group is based upon *Dicolus* Förster, a junior synonym of *Megastylus*. Since I believe that the informal use of generic names should be reserved for genus-groups, the *Dicolus* Group is henceforth referred to as the *insectator* species-group, (*insectator* Förster is the type-species of *Dicolus*). The American Entomological Institute has five undescribed species from Argentina, Brazil, and Peru that belong to this species-group.

Using Dasch's (1992) keys to Nearctic *Megastylus* species, *fallax*, *panamensis*, and *petilus* run to the "*Megastylus*" group. In couplet 1 of the key to the species of this group, *petilus* is taken off by several characters, foremost of which is the elongate (7.7–9.0× as long as wide) first flagellomere. This character, however, may well be homoplastic. Townes' sorting of the American Entomological Institute's Neotropical *Megastylus* segregated a group of 12 species that lack the occipital carina, most of which also have the first flagellomere elongate; *fallax* and *panamensis* belong to this group. Not only do these two species differ from *petilus* by the lack of an occipital carina, they differ in other characters as well (dimensions of the hind femur, number of bullae in vein 2m-cu, presence/absence of the posterior transverse carina). I suspect that the three species are not closely related, and the characters of the elongate first flagellomere and absent occipital carina are homoplastic.

While it is generally established that orthocentrines are parasitoids of nematocercous Diptera (Mycetophilidae and Sciaridae; Wahl, 1990), the inference that they are koinobiont endoparasitoids has been based upon larval morphology and the biology of related taxa (Wahl, 1990). The rearing of *M. panamensis* provides direct confirmation.

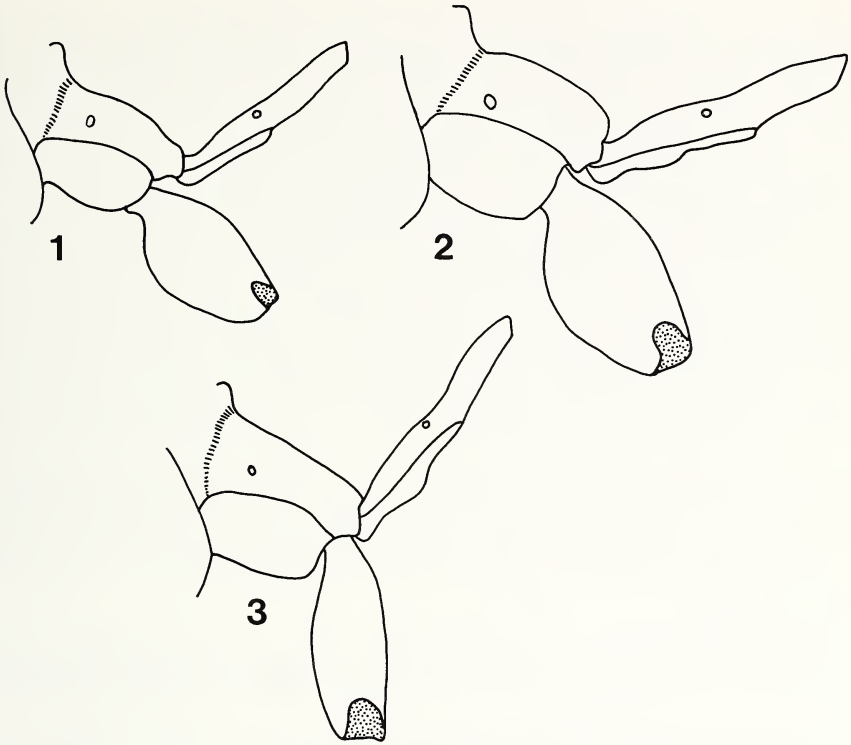
Megastylus fallax, new species

(Fig. 1)

Diagnosis. This species can be recognized by the strongly convex clypeus which drops sharply away from the midline, weakly granulate to smooth mesopleuron, one bulla of vein 2m-cu of the fore wing, complete vein 2-cu of the hind wing, absence of the posterior transverse carina, and flattened S1.

Female. Unknown.

Male. Structure. 1. Flagellomere 1 10.0–10.6× as long as wide; flagellomere 15 with numerous erect and semi-recumbent setae, erect setae about 0.5× as long as flagellomere; 28–36 flagellomeres present. 2. Clypeus strongly convex, dropping sharply away from midline; clypeal apex weakly concave medially. 3. Occipital carina absent. 4. Mesopleuron weakly granulate to smooth, strongly shining. 5. Metapostnotum about 0.1× as long as propodeum. 6. Posterior transverse carina of propodeum absent; lateral outlines of metapleuron and pronotum as in fig. 1. 7. Ventral surface of fore coxa with basal transverse carina present. 8. Hind femur 6.2–6.7× as long as wide. 9. Vein 2m-cu of fore wing with one bulla. 10. Vein 2-cu of hind wing complete. 11. Lateral outline of MS1 as in fig. 1; glymma of T1 absent; S1 flat in lateral profile and with its apex opposite spiracle of T1; T1–2 strongly granulate and without rugulae. **Color.** As in *M. petilus*. **Length.** 3.3–3.8 mm (3.8 mm); fore wing 2.9–3.5 mm (3.5 mm).



Figs. 1–3. Lateral aspect of propodeum and MS1. 1, *Megastylus fallax* Wahl; 2, *Megastylus panamensis* Wahl; 3, *Megastylus petilus* Dasch.

Specimens examined. Holotype ♀, UNITED STATES, Arizona, Cochise Co., 10.viii.1974, H. & M. Townes [AEIC]. Condition of holotype: intact. Paratypes: 1 ♂, same collection data as holotype except collected 22.viii.1974; 1 ♂, UNITED STATES, Arizona, Gila Co., nr. Roosevelt Lake, 24.v.1947, H. & M. Townes [AEIC].

Comment. The holotype and paratypes were described as paratypes of *petilus* Dasch (Dasch, 1992).

Etymology. From the Latin, *fallax*, deceitful or false, in reference to its previously cryptic identity.

Megastylus panamensis, new species

(Fig. 2)

Diagnosis. This species can be recognized by the moderately and uniformly convex clypeus, weakly granulate mesopleuron, extensive brownish-red coloration of the mesosoma, two bullae of vein 2m-cu of the fore wing, complete vein 2-cu of the hind wing, presence of the posterior transverse carina, and convex S1.

Female. Structure. 1. Flagellomere 1 about 8.0× as long as wide; flagellomere 15 with numerous erect and semi-recumbent setae, erect setae about 0.4× as long as

flagellomere; 35 flagellomeres present. 2. Clypeus moderately convex, evenly rounded; clypeal apex truncate medially. 4. Occipital carina absent. 5. Mesopleuron weakly granulate, shining. 5. Metapostnotum about $0.1\times$ as long as propodeum. 6. Posterior transverse carina of propodeum present; lateral outlines of metapleuron and pronotum as in fig. 2. 7. Ventral surface of fore coxa with weak basal transverse carina present. 8. Hind femur about $5.8\times$ as long as wide. 9. Vein 2m-cu of fore wing with two bullae. 10. Vein 2-cu of hind wing complete. 11. Lateral outline of MS1 as in fig. 2; glymma of T1 absent; S1 convex in lateral profile and with its apex apicad spiracle of T1; T1-2 strongly granulate and without rugulae. *Color.* Head with mandible, clypeus, paraocular area (extending to 0.5 distance between antennal socket and apex of eye), margin of antennal socket, whitish; remainder of supraclypeal area, scape, pedicel, deep brownish-red; head otherwise fuscous. Mesosoma (excepting legs) brownish-red except for white of ventral pronotal margin, and fuscous of metapleuron, propodeum, and metathoracic venter. Fore and middle legs with coxa, trochanter, and trochantellus, white; femur, tibia, and tarsus light brownish-red except for slightly darker tint of middle tarsus. Hind leg with basal 0.5-0.8 of coxa (margin of brownish-yellow area irregular), trochanter, anterior surface of trochantellus, basal 0.1 and median 0.4 of tibia, and tibial spurs, brownish-yellow; remainder of leg dark brown with diffuse longitudinal light streaking on femur. Metasoma fuscous except for brown median 0.3 of T3. *Length.* 5.0 mm; fore wing 3.7 mm.

Male. Unknown.

Type material. Holotype ♀, PANAMA, *Cocle*, above El Copé, 8.xi.1992, "Aiello lot 92-87, #4", P. Jolivet—D. Windsor—A. Aiello [AEIC]. Condition of holotype: intact.

Comments. *M. panamensis* was reared from *Proceroplatus belluus* Matile, a kero-platid predaceous upon ants (Matile, 1997; Aiello and Jolivet, 1997). The adult wasp emerged 31 Dec. 1992.

The larva of *panamensis* was torn during preparation and the relationship of the hypostomal—pleurostomal process to the labial sclerite, as well the presence or absence of the mandible, is unclear. It is very similar to the larva of *Megastylus* sp. 1 figured in Wahl (1986); the labial sclerite appears identical.

Etymology. The specific name is derived from Panama, where the specimen was collected.

Megastylus petilus Dasch

(Fig. 3)

Megastylus petilus Dasch, 1992:134. Type: ♀ [AEIC].

Diagnosis. This species can be recognized by the moderately and uniformly convex clypeus, strongly granulate mesopleuron, one bulla of vein 2m-cu of the fore wing, basally incomplete vein 2-cu of the hind wing, absence of the posterior transverse carina, and convex S1.

Female. Structure. 1. Flagellomere 1 $9.3-10.8\times$ as long as wide; flagellomere 15 with numerous erect and semi-recumbent setae, erect setae about as long as flagellomere; 42-48 flagellomeres present. 2. Clypeus moderately convex, evenly rounded; clypeal apex truncate medially. 3. Occipital carina absent. 4. Mesopleuron strongly granulate. 5. Metapostnotum about $0.1\times$ as long as propodeum. 6. Posterior trans-

verse carina of propodeum absent; lateral outlines of metapleuron and pronotum as in fig. 3. 7. Ventral surface of fore coxa with basal transverse carina present. 8. Hind femur 8.0–8.3× as long as wide. 9. Vein 2m-cu of fore wing with one bulla. 10. Vein 2-cu of hind wing basally incomplete. 11. Lateral outline of MS1 as in fig. 3; glymma of T1 absent; S1 convex in lateral profile and with its apex apicad spiracle of T1; T1–2 strongly granulate and without rugulae. *Color*. Overall color dark brown, the following brownish-yellow: malar space; clypeus; supraclypeal area; propleuron; pronotum except for ventral margin; ventral 0.5–0.6 of mesopleuron; basal 0.5–0.8 of hind coxa (margin of brownish-yellow area irregular); femora; fore and middle tibia and tarsi. The following white: mandible; ventral margin of pronotum; fore and middle coxae, trochanters, and trochantelli; dorsal surface of hind trochanter and trochantellus. The following brownish-yellow: hind femur and tibia except for dark brown stripe on basal 0.3 of posterior surface; T2 except for posterolateral corners; basal 0.3 of T3. *Length*. 4.3–4.9 mm (4.9 mm); fore wing 3.6–3.8 mm (3.8 mm).

Male. *Structure*. As in female. *Color*. As in female. *Length*. 4.4–5.6 mm; fore wing 3.5–4.3 mm.

Specimens examined. Holotype ♀, UNITED STATES, *Arizona*, Cochise Co., Portal, 22.viii.1974, H. & M. Townes [AEIC]. Condition of holotype: intact. Paratypes: two ♀, ♀ and one ♂, same collection data except collected 25.viii.1974, 5.ix.1974, and 24.viii.1987.

ACKNOWLEDGMENTS

I thank Annette Aiello and Andy Bennett for their critical comments.

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Received 28 November 1996; accepted 27 March 1997.